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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/801,852 | 03/17/2004 | Kyu-hee Han | 1572.1212 | 3105 |
| 21171 | 7590 | 04/04/2005 | EXAMINER | |
| STAAS & HALSEY LLP SUITE 700 1201 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005 | | | BARNEY, SETH E | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 3752 | |

DATE MAILED: 04/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/801,852

Applicant(s)

HAN ET AL.

Examiner

Seth Barney

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 11, 12, 14-22, 25-29 is/are rejected.
- 7) ☒ Claim(s) 5-10, 13, 23 and 24 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/17/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 1 objected to because of the following informalities: Examiner notes that the language in the claim can be interpreted to be either a group of like nozzles or disparate nozzles. Applicant is required to respond with the scope of the claim.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 14, 18, 19, and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,270,862 to McMillin et al.

Regarding claims 1 and 28, McMillin discloses a gas supplying apparatus having:

-a gas supplying ring (170) with one or more gas supplying channels along the interior of the gas supplying channel and a plurality of gas distribution channels directed toward a center of the gas supplying ring. See Figures 2b and 8a

-a plurality of adapters (180) with gas nozzles connecting to the gas distribution channels, respectively, that detachably connect to the interior for the gas supplying ring. See column 4 lines 25 and 26.

-wherein the gas nozzles have a variety of injection configurations. See Figures 8b and 8d.

Regarding claim 2, the injection configuration of the gas nozzles is changed by changing at least one of an injection angle and an injection position. See Figures 8b and 8d.

Regarding claim 3, each adaptor comprises a gas connecting channel connecting to respective gas distribution channels, wherein the gas supply ring has a plurality of gas supplying channels, and the adaptors are formed vertically to connect to the gas connecting channel. See Figure 8d.

Regarding claim 14, the gas nozzles slope downward from the gas connecting channel. See Figure 8b.

Regarding claim 18, a complete ring with internal gas channels inherently has an upper part and a lower part, the upper and lower parts begin combined to form the gas supplying channels.

Regarding claims 19 and 20, McMillin additionally discloses that reactant gases may also be delivered. See column 4 lines 31 and 32. Additionally other gases may be delivered in another ring (170).

Regarding claim 25, all of the gas connecting channels are directly connected to the gas nozzles of the adapter.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 4 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,270,862 to McMillin et al. as applied to claims 1 and 2 above, and further in view of U.S. Patent No. 6,197,683 to Kant et al.

McMillin discloses all of the limitations of the claim except for a valve blocking member. Kang discloses a chemical vapor deposition apparatus having valves (112) for different types of gases. See Figure 1. It would have been obvious to one having ordinary skill in the art at the time the invention was made to insert the valves of Kang into the gas supplying apparatus of McMillin in order to control gas flow.

7. Claims 11, 12, 15-17, and 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,270,862 to McMillin et al. in view of U.S. Patent No. 6,197,683 to Kant et al. as applied to claim 4 above.

McMillin discloses all of the limitation of the claims except for the angle of the nozzle being horizontal or the nozzle being positioned in an upper or lower part of the

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adapter. It would have been obvious to one having ordinary skill in the art at the time the invention was made to position the nozzles in any angle that would increase the deposition on the substrate.

8. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,270,862 to McMillin et al.

Regarding method claim 29, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct the device of McMillin using multiple parts. Use of the resulting apparatus would perform the method steps as claimed.

Allowable Subject Matter

9. Claims 5-10, 13, 21, 23, and 24 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent No. 5,851,294 to Young et al. discloses a gas injection system having two gas supplying channels (55).


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seth Barney whose telephone number is (571)272-4896. The examiner can normally be reached on 7:30am-5:00pm (Mon-Fri).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Scherbel can be reached on (571)272-4919. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Seth Barney
Examiner
Art Unit 3752

sb



David A. Scherbel
Supervisory Patent Examiner
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